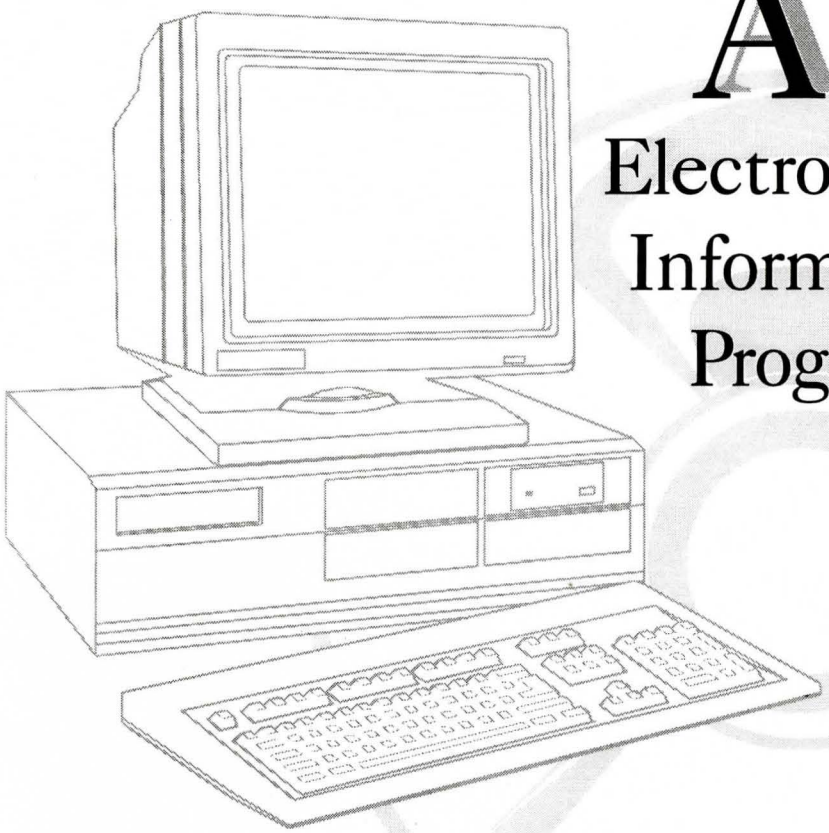

A Plan for an Electronic Library and Information Services Program for Iowa

Presented to:
The Honorable Terry E. Branstad
and Members of the Iowa General Assembly

July 1995

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"*Vision: Each Iowan will have equal access to information and ideas in order to lead an enriched life through lifelong learning and to participate knowledgeably and productively in a democratic society.*"

Iowa Commission on Libraries. *Unified Plan for Library Service in Iowa,* October 27, 1994.

Presented to:
The Honorable Terry E. Branstad
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by the
Library Services Advisory Council

July 1995

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Executive Summary

Governor Terry E. Branstad appointed the Library Services Advisory Council (LSAC) in September 1994 to "develop a coordinated, cost-effective, and comprehensive plan for the implementation of an electronic statewide library and information services program. This document summarizes the conclusions and recommendations of the council.

Members of the LSAC believe that access to information, particularly via the evolving electronic information infrastructure, is vital to the future economic well-being of Iowa and to the education and quality of life for its citizens. The state has a unique role to play in protecting access to these resources for all citizens, not just economically privileged ones.

This document recommends that the state invest in an expansion of the already existing information infrastructure and considerable expertise that resides in Iowa rather than creating unnecessary parallel structures. Libraries in the state already are heavily involved in creating this future; but cohesive statewide coordination is lacking. A governance structure and a funding model are proposed that would provide for a coordinated approach and cost-sharing between local, regional, and state entities. State funding priorities are outlined.

Information technology is no panacea. It is complicated and in the early stages of evolution. Library staffs are in a unique position to integrate knowledge of the content, formats for delivery, the hardware and software needed to manipulate and manage the information, and networks needed to transmit data from one location to another in seamless fashion. The role of technical standards in network design and information delivery is discussed at length. Libraries already support most of these evolving standards and will continue to do so in order that information will be transferable across different technical platforms. Training and continuing education needs for the public, for library staffs, and for decision-makers are highlighted.

The Iowa Communications Network (ICN) has a unique role to play in networked information delivery by libraries. It guarantees that all areas of the state would be on fiber-optic cable and would have access to a full range of information technology. It provides a level playing field for rural areas to compete economically, to offer quality education, and to provide for life-long learning. Access to the ICN by Iowa libraries would eliminate geographic and physical barriers to information technology.

Specific recommendations:

1. Recognize the role of libraries and their provision of access to information as a cornerstone to economic development and the economic health and well being of Iowa.

2. Recognize the State Library of Iowa as key to the planning, development, and coordination of library services statewide (*Code of Iowa*, Subchapter IV, section 256.51). No other organization within the state has such a mandate.

3. Recognize libraries as a fundamental component in the educational process, both formal and informal, with a vision of providing all Iowans access to information and ideas that enhance their lives and allow them to be productive citizens in a democratic society.

4. The state must fund the last mile of fiber-optic cable to libraries.

5. The State Library of Iowa should create a State of Iowa Libraries Online (SILO) Advisory Board which is representative of the library community to plan, educate, and advocate for the interests of Iowa library users in the new information environment.

6. The Iowa Telecommunications and Technology Commission (ITTC) should create a Library Network Advisory Committee; this committee should advise and inform the ITTC (the governing body for the ICN) regarding library applications on the ICN. It should be a five member committee (one member being drawn from the SILO Advisory Board) with representation from the various types of libraries.

7. A continuing education program should be designed that is aimed at three audiences: the public, library staffs, and decision makers.

8. Funding strategies will be a complex matrix made up of multiple funding sources with local, state, federal, and private sector responsibilities. Areas of state responsibility have been defined; any state funding strategy should be guided by principles that protect the public interests of the citizens of Iowa as information is treated increasingly as a commodity.

9. Increase the State Library and regional library budgets sufficiently to carry out new mandates for planning and coordination of statewide information networks and access programs such as Open Access and Access Plus which require a local and state match to succeed.

10. Technical standards are critical to transferability of data between different equipment platforms and should be supported by libraries and information providers.

11. The Council calls for wide distribution of this report to key players in the state; it also suggests holding a special conference for legislators, librarians, and library friends to discuss the conclusions of the report and possible legislative actions.

Introduction

Council Charge

The Governor of Iowa, Terry E. Branstad, appointed the Library Services Advisory Council in September 1994 in response to growing concerns about the ability of Iowa libraries to make available electronic information over telecommunications networks and, more specifically, to address questions about the potential use of the Iowa Communications Network (ICN) by libraries within Iowa. The Council was charged to "develop a coordinated, cost-effective and comprehensive plan for the implementation of an electronic statewide library and information services program." Council members have interpreted this charge broadly, that the plan should include all types of libraries (public, academic, special, and school/media centers) and all types of networks utilized by libraries (ICN, Internet, commercial). It also recognizes that the ICN is one of several telecommunications platforms used in the library and educational environment.

Council Membership

The membership of the Library Services Advisory Council is representative of all types of libraries in Iowa (public, academic, special, school/media centers). It also has public representation from citizens, library board members, school administrators, local politicians, etc. Again, the membership reflects the broad charge to the council.

Council Member	*City*	*Representing*
Karen Burns	Council Bluffs	Regional library
Colette Carroll	Wapello	School media center
Kenneth Davenport	Waterloo	Regional library
Bryan Davis	Cedar Rapids	Public library
Nancy Eaton (chair)	Ames	Regents university library
Clark Goltz	Decorah	Public library
Gordon Greene	LeMars	State Library Commission
Dotta Hassman	Traer	Institution library
Thomas Hoffman	Johnston	Area Education Agency
Karen Keninger	Newton	Citizens
Kay Runge	Davenport	Public library
Richard Schneider	Fairfield	Iowa Library Friends
Jayne Smith	Ankeny	Community college library
Sharman Smith	Des Moines	State Library of Iowa
Carole Stanger	Creston	Public library
William Stoppel	Des Moines	Private academic library
Roxanna Tovrea	Des Moines	Special library
Lawrence Woods	Iowa City	Regents university library

An Iowa Family's Future (A Scenario)

Author: *Karen Keninger, Library User*
Member, Library Services Advisory Council

[The year is 2010. The Miller family is gathered around the supper table in their home in rural northwest Iowa. They have just spent part of the afternoon at their small local public library.]

"I like going to the library," Suzanne declares, reaching across the table for the mashed potatoes. "The librarian helped me find four new games."

"Her name is Mrs. Iverson," Courtney says, " and besides, games are for babies. When you're in junior high, you have real work to do."

"Now Courtney, these are games from the Child Development Center at the University of Arizona, and they're going to help Suzanne with her math and her reading. What did you find for your report on Huck Finn?"

"I've already read the book, of course, but my teacher wants me to focus on life along the Mississippi. So I down-loaded a video of some steamboats in the 1880s, from Washington University in St. Louis, and a couple of versions of the movie from one of those video libraries in California. I also checked out a book of Mark Twain's speeches that our library has, and downloaded some pictures of the 1993 floods from Davenport. The University of Iowa had a great multimedia project on it, too, and I downloaded part of that. Now all I have to do is put it all together and present it on Friday."

"I'd like to borrow those steamboat clips," Grandpa Bob says. "Since I quit farming two years ago, I'm busier than I ever dreamed. I have a presentation on Wednesday for the fifth graders' Iowa History unit talking about steam power, and your video might be just what I need to round it out. When Mrs. Iverson finished with Suzanne, she helped me telnet to the Michigan Institute of Technology library collection where I found some excellent footage on modern steam power applications. I downloaded footage that I can show to the high school industrial design class next Friday."

"You and your steam engines! I'm glad the schools can put you to good use!" his wife Martha smiles. "But what I want to know is this. When we went to the library this afternoon, did you find what you need to finish putting that antique gas engine back together? It's been strung all over the basement for six months now."

"You'll be pleased to know, my dear, that Mrs. Iverson and I found exactly what I needed in a collection of journals on metallurgy in a library in Berlin, Germany."

"I hope you have an English translation of it."

" No, but Mrs. Iverson knew just where to go online to get some software on the network that will do the translating for me."

"Well you'd better keep everything off my sewing table," she laughs, "because while you were connecting online to Berlin, I went online to Beijing. I found some adorable pictures of Chinese children in the 19th century."

"What do you need those for, Grandma?" Courtney wonders aloud.

"I'm making the costumes for the new play at the community theater. It's about a missionary school in China during the Opium Wars. I can use the pictures to design the costumes and make-up for the children in the play. I found some patterns there too that I think I can use. All the instructions are in Chinese, but the pictures are perfect."

"From the looks of that pile of novels you brought home, my dear, you're not going to have any time for sewing, " Grandpa Bob grins. "You know, girls, that 20 years ago most of the things we found today at our library would have taken us months to locate and might have cost us a lot of money to buy, if we could have gotten them at all. Living in a small town that's 100 miles from the nearest university library and at least 50 miles from a big public library would have made all this just about impossible. Now with Mrs. Iverson's help, we can just sit down at the library's terminals, log onto the ICN, and go all over the world finding what we need."

"I'm glad she knows her way around out there," Dad says. "Because I sure don't have time to learn all the ins and outs of cyberspace. You know, I've been thinking about expanding my cabinet-making business. I contacted some people in Brazil who might buy that line of furniture I've designed, but I'm going to need to hire employees, set up a production line, and keep all my I's dotted and T's crossed for the government. So I found a new handbook put out by the Department of Employment Services. I also got a publication from OSHA, some information from Drake University on setting up a small production facility, and some loan application forms from the SBA. "

"I'm glad so much of our government information is on-line," his wife exclaims, getting up to bring dessert to the table. "I'm studying tax reform for a report to the League of Women Voters, and it's great to have all the proceedings from Congress at your fingertips, not to mention the actual laws and budgets to look at."

"Gee, Mom, I thought you spent all afternoon in the ICN room in that class about how we shouldn't eat so much fat and salt and stuff," Courtney says.

"No, today I was using the ICN room to meet with City Council members from all over the state. We were discussing ways to write ordinances that would curb juvenile crime. But you can thank the Gourmet Society of New Orleans and my cooking class for this Creole torte we're having for dessert."

Libraries, Information, and Iowa's Future

The Scenario

This plan attempts to clarify the purposes of information technology and how it will benefit the citizens and children of Iowa. Only with these purposes clearly delineated is it appropriate to turn to the technologies themselves or the funding strategies required to make these capabilities widely available to citizens of Iowa. The opening scenario illustrates various roles that libraries play in society, all of which can be enhanced and augmented by the use of information technology. The scenario assumes the existence of ICN connections and meeting rooms. The scenario highlights the various impact areas that information technology has the potential to improve: education, informing citizens, and economic development.

Education

Information is a cornerstone of the educational process. Iowa has a national reputation for valuing education and supporting it. Thus, it is critical to the state that contemporary information systems that are the underpinning of K-12, higher education, and lifelong learning remain competitive if our educational systems are to produce students and citizens equipped to work and live in the world of the 21st century. This will require not only an upgrade of information systems in our schools, colleges, and universities, by using the ICN system for distance education, but also to continue to provide all Iowans access to learning through libraries. Some traditional methodologies will still be used, but more and more libraries will be accessing electronic information resources for their patrons. This will be achieved by use of CD-ROM networks, online services, ICN meeting rooms, dial-up access services with electronic downloading capabilities, and information cooperatives to share information.

An Informed Citizenry in a Democratic Society

Information is a cornerstone of an informed citizenry. Iowa has a national reputation as an informed electorate. It is critical that libraries continue to make available to all of its citizens information that allows them to make critical judgments about their locality, their state, and their nation. Particularly in a rural state such as Iowa, the use of telecommunications networks to distribute information electronically will improve our citizens' ability to participate in the political process. Lack of information, whether by lack of physical access or inability to pay for information, will inhibit their ability to act as informed and participating citizens.

Economic Development

Information is widely recognized as a key element in economic development. It has a role in pure research, in technology transfer (the process of transferring that research into the development and marketing of new products), in product development, in the creation of business plans, and in the creation of new jobs within the state. New roles taken on by the state universities in technology transfer recognize the function of higher education in this process which is so critical to the economic health of Iowa. Information increasingly is a commodity, with value in the public and private sector. As a clean industry that suits Iowa's economic profile, it should be encouraged by the state. The state needs to invest in this sector.

Given these priorities for Iowa's future, the role of libraries in the furthering of access to information in all formats, including the fast-growing sector of electronic information, is a key factor. Companies evaluate access to libraries as part of the overall environment for education, research, and quality of life when they make decisions to move into the state. Libraries are an investment in the information infrastructure. They already exist; they do not need to be created.

Equal Access

Electronic library services are crucial for Iowans. The most obvious reason relates to the rural nature of our state. Electronic resources provide patrons from the smallest community to the largest with similar opportunities for acquiring information easily and quickly, independent of geography and distance.

But electronic access to information goes beyond equalizing access for rural and urban patrons. Electronic resources make information available to the patron who could never use our traditional library collections. The patron who is blind or visually impaired can access electronic information by using hardware with screen reading devices or by using software which enlarges the screen image. The patron who has a disability which limits the ability to hold a book or turn the pages can access electronic resources by adapting the hardware to accommodate his or her particular abilities. Perhaps this patron needs an enlarged keyboard or a switch device. The importance of electronic library resources lies in the fact that never before were these individuals able independently to use their libraries. Now that the capability exists, we must assure that it is extended to every Iowan whose life would be enhanced by these capabilities.

Finally, we must provide access to information technology regardless of an individual's economic status or ability to pay if Iowa is to provide equal opportunity for education and jobs. Ability to utilize new forms of information will influence people's ability to function in society, to earn a living, and to contribute to the economic health of the state through its tax base. Every citizen must have access to these opportunities through our public institutions if "equal opportunity" is to have meaning.

Integration: The Library's Role

The State of Iowa exists in an environment where vital information and communication is increasingly dependent on computerized networks such as the Internet and the emerging National Information Infrastructure (NII). In Iowa, an important step toward participation in this new information environment is the construction of the Iowa Communications Network (ICN). If the ICN becomes part of the larger Internet and NII, the information outlook for Iowans will be increasingly bright. The benefits these technological developments will have for the citizens of Iowa will be proportional to their access to them and the effectiveness with which they are able to use the informational tools provided.

Information technology is now maturing; careful coordination is mandatory if the state's citizens are to receive maximum benefit from the technology. Libraries are the "people's access." The best entry points into this technological information environment for most people will be through Iowa libraries. Important local library automation and prototype projects have moved the agenda forward, but no statewide approach existed. (See "Iowa Programs, Networks, and Consortia" on page 12.) Now is the time to "seize the moment!"

Information technology is not a panacea. While technically proficient users will harness its power without much help, challenged by the opportunities promised by the technologies, many citizens and

students will need help in learning how to utilize these powerful tools effectively and to understand their limitations. Library staffs are in a unique position to integrate knowledge of the content, the formats for delivery, the hardware and software needed to manipulate and manage the information, and networks needed to transmit the data from one location to another in seamless fashion. This role of "integration" will require new skills. Many libraries have already accepted this challenge. All libraries will benefit from a statewide approach to facilitate these changes.

Transforming the Library

The transformation of the current library into the library of our family scenario of the year 2010 will require concerted efforts in the areas of:

- Investment in hardware and applications software;
- Utilization of high performance networks with enough bandwidth to be able to transmit high volumes of full text and graphics with full color, sound, and motion;
- Redesign of our learning and teaching methods to benefit from use of information technology in creative ways;
- Training programs for both library staffs and users of the systems to speed up adaptation of these systems and to ensure their effective use; and
- Support of national and international technical standards to ensure interoperability between different platforms to guarantee transference of data across different technical platforms.

This plan recommends that the state invest in an expansion of the already existing information infrastructure and considerable expertise that resides in Iowa rather than creating unnecessary parallel structures. Libraries have already made major investments in electronic information and networks; it would be wasteful to ignore those investments.

The following sections of this report ("Environmental Scan" and "Plan for an Electronic Library and Information Services Program for Iowa") describe in detail those activities already under way, as well as those actions needed to provide a positive environment for change.

Role of the ICN

Information will be networked with or without the ICN connections to libraries simply because the need is there and citizens will demand access to electronic information. However, there will be decided advantages to the citizens of Iowa if libraries are connected to the ICN. First, only the ICN is committed to connecting to all rural areas within the state so that they will have the same opportunities as densely populated areas to supply distance education and information services. It is not economically viable for the private sector to connect all localities to networks in low population density areas. The ICN provides a level playing field throughout the state for vital new services to local communities. Second, librarians are prepared to provide the public services needed by many citizens to utilize these services regardless of ability to pay; the private sector has no such mission. Third, the ICN can provide sufficient bandwidth for the high data demands of transmitting full text, graphics, color, and motion video across the networks in a cost-efficient manner. Finally, the ICN's educational discounts will allow libraries to provide information at the most affordable rate; commercial rates are beyond the resources of many libraries.

Environmental Scan

In order for the Miller family scenario to become a reality, many changes will need to take place in Iowa's libraries, schools, government offices, and technical infrastructure. The key environmental issues that will impact these outcomes can be categorized as follows:

- **Data conversion**: Much of the information in print or microform will need to be converted to electronic formats that can be used by computer systems and transmitted over data networks. Library card catalogs and indexes will also need to be converted to electronic format in order to be searchable over networks. Because of the expenses associated with converting older information from paper or microforms to electronic formats, which can vary from $2 - $5 per page or $0.50 - $2.50 per bibliographic record, conversion of older information will be selective, based upon projected usage. Much of our older materials will continue to be housed in their original formats and either used in the original format or scanned at the time of actual need via new scanning technologies.

- **Electronic publishing**: Increasingly information is being published directly in electronic format because of its flexibility and may not even be available in paper or microform. Thus, libraries must be able to provide these electronic publications to the public just as they now provide paper, microform, and audio versions of information and publications. Many libraries in Iowa are already making electronic publications available to their patrons as they become available from publishers. These products are still in early development and are changing, requiring constant re-education of staff who must be knowledgeable about their design and use.

- **Local library automation systems**: Libraries will need to be equipped with local library computer systems that help operate the library, such as online catalogs, circulation systems, electronic reserve systems, online interlibrary loan and document delivery, etc. These systems are used in conjunction with provision of the information itself.

- **Telecommunications networks**: Libraries and schools will need to utilize a variety of telecommunications networks, depending upon the application. Of particular importance are the Internet (international research and education network of networks) and the Iowa Communications Network (ICN) that should connect all schools and libraries within the state. Adequate capacity (bandwidth) is critical to transfer large amounts of data to many users in all formats (multimedia).

- **Technical standards**: Systems and the data itself increasingly must meet national and international technical standards in order to ensure that data is interchangeable across different computer systems and able to be transmitted over different networks. This applies to both data and video that would be transmitted over the ICN.

- **Distance education**: As the costs of traditional education delivery systems continue to exceed general inflation indexes, there is increasing interest in utilizing distance education methodologies both to reduce costs and to provide increased access to citizens in remote areas. Just as libraries support curriculum needs of K-12 and institutions of higher education, so they will need to provide information and publications to students taking courses over the ICN. Every ICN classroom and meeting room should have a data connection so that students not only receive the courses but also can access information

needed to successfully complete the coursework. These same facilities can be used for lifelong learning opportunities and for support of government agencies.

- **Copyright and intellectual property rights**: There is a general misperception that electronic information will be free. However, the value of the information is independent of the delivery method; and electronic information will have to be paid for just as traditional publications are. Nationally, copyright and intellectual property rights are under close scrutiny for revision by Congress in order to encourage publishers to support electronic publishing. There is hope that use of technology for information delivery will be more efficient and less costly than current publishing methods; but there is no guarantee that those savings will be passed on to libraries and other users. It is increasingly common for publishers to use licensing agreements to control use and pricing of electronic information rather than to rely on copyright. And even scholarly publishing is viewed more and more as a commodity, to the detriment of open sharing of research and scholarship.

- **Need for integration**: The technical platforms, applications software, networking options, and intellectual property issues (copyright, licensing agreements, etc.) cry for a strategy within the state that would integrate these various components into a logical approach. This will require technical leadership within the library and information technology community, and an agreement to follow basic principles and protocols. There must be commitment at the state level to ensure that these principles and protocols are put in place.

Plan for an Electronic Library and Information Services Program for Iowa

Applications and Services

The Iowa Commission on Libraries adopted the Vision for Library Service in Iowa on October 27, 1994. This vision states that "Each Iowan will have equal access to information and ideas in order to lead an enriched life through lifelong learning and to participate knowledgeably and productively in a democratic society." (Iowa Commission on Libraries. *Unified Plan for Library Service in Iowa,* October 27, 1994.)

Libraries must be able to provide a basic level of service to all Iowans whether their address is RR#1, Cylinder or Terrace Hill, Des Moines. What does this basic level of service include? Whether the information sought is available by print, audiovisual, or electronic format, every library in Iowa must be able to provide **access** to the information needed by its users. One or more workstations with connections to the ICN and the Internet will provide libraries with data access. The physical location of such networked workstation(s) would be determined by the local library. It could be located anywhere in the library or in a separate classroom within the walls of the library. It might be designed for one user at a time, or several users depending on the needs of the library's community. These workstations will become the points-of-presence for 534 public libraries, 74 academic libraries, 1,193 school libraries and 85 special libraries to serve the 2,800,000 residents of the State of Iowa. Four out of five Iowa residents have library cards and 24,900,000 items were circulated in 1994. (*Iowa Public Library Statistics, 1993-1994*, State Library of Iowa.) Many citizens already use libraries heavily; libraries are the natural access point for electronic information for these citizens.

The ever growing demand for information from businesses, schools and individual Iowa citizens forces the issue that libraries must be connected to the Iowa Communication Network and the Internet if our mission is to be carried out in the emerging technological environment. Alan Thein Durning stated this concept clearly when he said, "...Libraries are the most democratic institutions yet invented. Think of it! Equal access to information for any citizen who comes inside. A life time of learning, all free. Libraries foster community too, by bringing people of different classes, races, and ages together in that endangered form of human habitat: non-commercial public space." (Alan Thein Durning. "The Seven Sustainable Wonders of the World," *Utne Reader*, March/April 1994.)

Iowa libraries have long recognized the need to expand and broaden their services for the benefit of the citizens of Iowa. They have been aggressive in developing programs to encourage all types of resource sharing. Portions of the needed infrastructure have been started by libraries through innovative programs, networks, consortia, and services already in place in Iowa (see box following). These programs, networks, and consortia have grown independent of carefully coordinated objectives. Of particular note is **SILO** (State of Iowa Libraries On-line), a statewide library network being developed by the State Library of Iowa. The initial project is a "pilot project" being funded through one-time funds from a federal grant begun in December 1994 and funded through December 1996; continuing funds will need to be identified to develop this into a robust library network.

We are at a crossroads. Statewide leadership and focus are required if the promise of information technology is to become a reality in Iowa. There are many existing programs, networks, and consortia in Iowa as of May 1995; this plan will tie these programs together to create a statewide strategy.

Iowa Programs, Networks, and Consortia

- **Access Plus** - A State Library of Iowa subsidy program in which libraries agree to loan their materials without charge to other libraries for use by library customers.
- **Biotechnology Project** - A project funding Iowa State University and three other midwestern universities to organize electronic networked information in the area of biotechnology.
- **CICNet** - A regional network providing Internet services and access to the University of Iowa and other connected institutions through the UI gateway to the Internet.
- **CIC Virtual Electronic Library** - A network connecting the thirteen research libraries within the CIC (Committee for Interinstitutional Cooperation) - the Big Ten institutions plus the University of Chicago. The University of Iowa is a member.
- **Iowa FirstSearch Initiative**- The State Library's one-year, statewide electronic network project which connects 200 Iowa libraries to OCLC's FirstSearch and the Internet.
- **IHIN** - The Iowa Health Information Network - A health science information network based in the Hardin Library at the University of Iowa, providing access to **Medline** and other health-related databases to Iowa libraries.
- **ILIN** - Iowa Libraries Information Network - Part of the **SILO** project, consisting of libraries connected over the Internet using the Z39.50 connecting protocols.
- **IPAL** - Iowa Private Academic Libraries, a consortium.
- **IREN** - The Iowa Research and Education Network - A statewide organization of institutions committed to assisting libraries and other educational institutions to acquire Internet access. IREN also brokers Internet access through CICNet.
- **IRIS** - A statewide, interlibrary loan network which uses computers to facilitate requests and responses for materials.
- **MIDNet** - A regional network providing Internet services and access to Iowa State University and other connected institutions through the ISU gateway to the Internet.
- **NetIowa/INS** - Another Iowa entity providing Internet services and access through leased phone lines.
- **NLM/Docline** - A Bethesda, Maryland-based network providing document delivery services to medical libraries around the world.
- **OCLC** - A membership-based network providing catalog information and reference and full-text database access to libraries world-wide.
- **Open Access** - A statewide program that gives Iowans the opportunity to directly borrow materials free of charge from any of the 600 participating libraries.
- **Regent's Institutions** - The five state-supported educational institutions: Iowa State University, the University of Iowa, the University of Northern Iowa, the Iowa Braille and Sight Saving School, and the Iowa School for the Deaf. The three university libraries coordinate programs and services.
- **RLIN** - The Research Libraries Information Network - A California-based network providing cataloging and database access to research libraries world-wide, including the University of Iowa.
- **Rural Datafication Project** - A project sponsored by **CICNet** to provide Internet access and services to rural areas of the midwest, including Iowa.
- **Rural Telemedicine Projects** - Several federally-funded projects to provide clinical and research support for medicine in rural Iowa communities.
- **SchoolNet**: A network of K-12 schools being developed in Iowa City.
- **SILO** - State of Iowa Libraries Online - A statewide library information network using the Internet and the Iowa Communications Network. The State Library of Iowa received a $2.5 million federal HEA-IIB grant for this two-year research and demonstration project; continuing funds will need to be identified.
- There also exists several community-based networks in the Black Hawk County, Des Moines, and Quad Cities areas.
- In addition to these, there are several commercial services providing limited Internet access, such as **America Online**, **CompuServe**, **Prodigy**, and **BRS Afterdark**.

Though these projects and consortial activities lay the foundation for provision of networked information in Iowa, much more needs to be done. Iowa needs to strengthen the infrastructure by providing the funding for the "last mile connection" to the ICN for all Iowa libraries. By doing so, Iowans will have equal access to information and ideas as stated in the Vision for Library Service in Iowa. To justify connection to the ICN, each library should be a resource to the network as well as a user of the network. For example, each small town public library could enter their city code into the system, thus making available Iowa city codes to every Iowan. Libraries will foster communication on a regional, state, national and world-wide basis. Economic development for Iowa will be enhanced with communities' access to the network.

Networks and Technical Standards

Many standards and protocols will need to be utilized by libraries using modern telecommunications networks. It may help to illustrate that use by returning to the earlier Miller family scenario which uses resources that are both now in place and contemplated within Iowa libraries. These activities required that a number of standards and protocols be in place on the ICN and in the libraries and other institutions to which our family connected.

The standard protocol used for all of the data transmissions was **TCP/IP**. The links to on-line catalogs used the **Z39.50** protocols for linking systems. The electronic presentation for Courtney's homework assignment was created using **SGML** to mark the text for searching and manipulation. The multimedia project at the University of Iowa used **JPEG**, **NPEG**, **GIF**, and **QuickTime** to store and retrieve sound, video and pictures. The electronic resource locator at the public library used the **World-Wide Web** to organize the resources listed and used **NetScape** as a viewer. The "home page" for the State Library Web was created using **HTML**, a mark-up language for **HyperText**. The World-Wide Web uses **HyperText** to provide links between resources and uses the **URL** to link to the remote resource. Our student used a **WebCrawler** to find which locations had information about the Mississippi River.

Not only has this activity required a number of standards and protocols to be in place, it also requires Internet access from ICN classroom sites. *It especially requires that Internet and ICN access are closely linked and, preferably, fully integrated.* It implies that a gateway to the world beyond Iowa is ubiquitously available. If each student in the course does similar research, the research usage in support of the class will require more capacity on the ICN than the class itself. In order for the libraries of Iowa to fully support the educational uses of the ICN, these capabilities must be present and the libraries must be connected to the ICN. While the ICN can potentially provide Internet access from the point of presence (POP) in each county in Iowa, the direct connection to the library itself or the "last mile" is an issue which must be resolved before the State of Iowa can lay claim to a true statewide information network.

Provision of networked information requires a high level of technical capability, knowledge of national and international standards, and expertise in design of systems to facilitate ease of use. Such network applications will not happen by themselves. This requires knowledgeable professionals involved in the design and implementation over extended periods of time as the national information infrastructure evolves.

Essential protocols and standards for Iowa libraries

- **TCP/IP** - Transmission Control Protocol/ Internet Protocol. Perhaps the most critical connectivity protocol for libraries. This is the protocol that is used by the Internet and on which most of the other protocols in this section depend. The ICN does not currently support this protocol.
- **NISO (National Information Standards Organization) Standards** - (selected)

  Z39.70 (draft) - Exchange of circulation systems data.

  Z39.50 - Information retrieval service definition and protocol (defines the machine connection between disparate systems).

  Z39.58 - Common Command Language (defines the search protocols used to search a database).

  Z39.63 - Interlibrary loan data elements.
- **ISO (International Standards Organization) Standards** - (selected)

  646 - Interlibrary loan protocols and data elements.

  X.12 - A standard for electronic mail transmission.
- **MIME** - Multi-purpose Internet Mail Extensions - An electronic mail standard which allows images and sound to be sent.
- **EDI** - Electronic Data Interface - Standards that allow the sending of ordering and claiming information to publishers electronically.

Critical navigation tools and clients

Audio-Players - Tools that download and play digital sound files.

Cello - A Windows-based client for searching the WWW.

Gopher - A menu-based system for exploring Internet resources.

InfoStation - A Windows-based client for accessing library catalogs and the Internet developed by VTLS Systems, Inc.

Mosaic NetScape - A graphical WWW client developed by Mosaic Communications Corp.

NCSA Mosaic - A graphical WWW client developed by NCSA at the University of Illinois.

Veronica, Archie - Tools for searching **Gophers** on the Internet.

WAIS - Wide Area Information Servers - A powerful system for looking up information in databases (or libraries) across the Internet.

WebCrawler - A tool for searching WWW sites by keyword.

WinPac - A Windows-based client for accessing library catalogs and the Internet developed by NOTIS Systems, Inc.

WWW - World-Wide Web - A hypertext-based system for finding and accessing Internet resources.

Critical data standards

ASCII - The standard 8-bit character set used by most computer systems today.

HTML - Hypertext Markup Language - A standard to define the links between text segments in a hypertext environment such as WWW.

HyperText - A method for connecting related pieces of text so that by pointing to one and typically clicking on a "mouse" one goes immediately to the related text.

MARC - Machine Readable Cataloging - The standard developed by the Library of Congress which is used by most libraries for cataloging records.

QuickTime - One of the standards for recording videos and motion pictures digitally in a computer file.

SGML - Standard General Markup Language - A standard used to define the content and structure of electronic text.

TEX - A standard used to define non-textual characters such as mathematical formulas.

UNICODE - A 16-bit character set being developed to support non-roman as well as roman alphabets.

Selected compression/decompression standards

GIF - Graphics Exchange Format - A protocol for storing pictures in a computer file.

JPEG - Joint Photographics Experts Group - Another protocol for storing pictures in a computer file.

NPEG - National Photographics Expert Group - Another protocol for storing pictures in a computer file.

Governance Issues

With the advent of the State Library networking project, SILO (State of Iowa Libraries Online), Iowa libraries find themselves at a historical turning point. SILO has the potential for vastly increasing library and patron access to the information infrastructure, bringing a wealth of potential benefits to Iowans statewide, but also raising many issues to be resolved in order to make effective use of this new opportunity. Careful planning and coordination will be necessary to accomplish the tasks ahead. Since the State Library has duties and responsibilities related to the planning, development, and coordination of library services statewide (*Code of Iowa*, Subchapter IV, section 256.51), it is best positioned to carry out this charge in concert with the many library constituencies which will be affected. Thus, this council recommends the establishment of a SILO Advisory Board to aid the State Library of Iowa in execution of this charge.

SILO Advisory Board. To establish the best decision-making process possible to implement present and future networking technologies, it is necessary to create a body representative of the library community to plan, educate, and advocate for the interests of Iowa library users in the new information environment. This body will be known as the SILO Advisory Board.

Duties and Responsibilities of the SILO Advisory Board: The purpose of the SILO Advisory Board will be to advise and assist the State Library in advancing the interests of electronic library users in Iowa. In all its deliberations it should focus on providing the most useful possible service to the citizens of the state. In carrying out

its charge, the SILO Advisory Board will focus on issues pertinent to the development of the library information network. These issues include but are not limited to the following:

- Implement standards and protocols necessary for access to and easy use of the network
- Implement connections between SILO, Internet and NII
- Recommend databases to be available on SILO
- Investigate licensing issues
- Establish interlibrary loan protocols and reimbursements
- Develop appropriate document delivery channels
- Plan for current and future financial needs
- Facilitate resolution of the "last mile' issue for local libraries
- Facilitate strategic planning for the network for evolving services and technologies

Representation: Because the library community is diverse, with insight and expertise available from a variety of sources, the SILO Advisory Board will be comprised of seventeen persons, one constituency representative from each of the following organizations plus two at-large representatives. The library representative on the Educational Telecommunications Council will also be an ex officio member of the SILO Advisory Board. The board should be balanced by race, gender, age, etc.

Organization	**Emphasis**
Iowa Small Libraries Association	Small Communities
Iowa Libraries of Medium Size	Mid-size Communities
Iowa Urban Public Library Association	Large Communities
Iowa Regional Library System	Public Library Support Services
Iowa Private Academic Libraries	Private Higher Education
Inter-institutional Library Committee	Regents Institution Libraries
Iowa Assn of Community College Librarians	Com. College Libraries
Agency serving disabled citizens, e.g. SRS	Disabled citizens
AEA Media Divisions	K-12 Support Services
Iowa Educational Media Association	K-12 Media Centers
State Agency Library Association	State Agencies
Special Library Association	Private and Special Libraries
Medical Library Association	Medical Libraries
Iowa Library Association	Multi-type Library Community
Iowa Research and Education Network	Educational/Library Networking
At Large Representatives (2)	Library Users

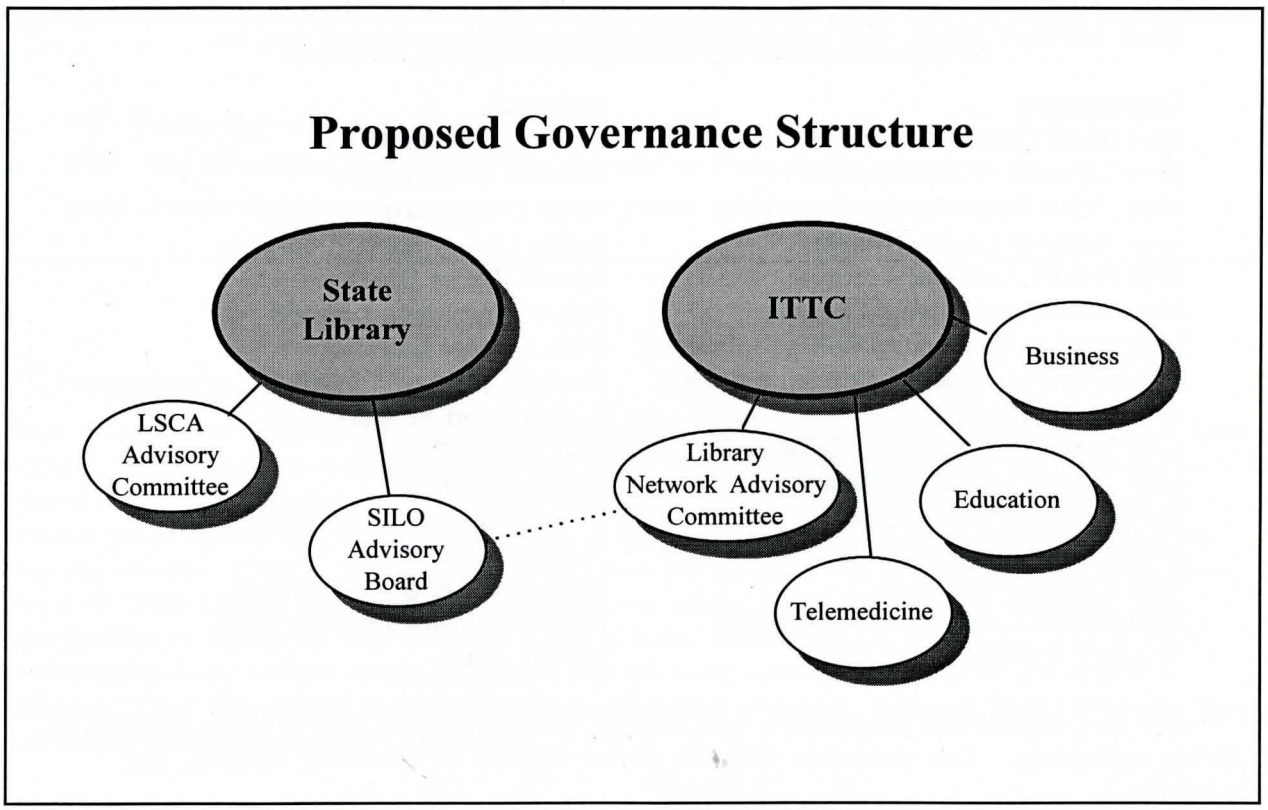
The council also recommends creation of a new advisory committee to the ICN to advise specifically on library applications. This committee would be similar to those for education, business, and telemedicine.

Library Network Advisory Committee. Because of the unique nature of the ICN and the potential importance it has for delivery of networked services, we call for the creation of a Library Network Advisory Committee under Section 8, paragraph 2 of Senate File 2089 to advise and inform the Iowa Telecommunications and Technology Commission (ITTC) or its successor about library networking issues and to advance library interests in the ICN decision-making process. The Library Network Advisory Committee should have representation from the SILO Advisory Board.

Duties and Responsibilities of the Library Network Advisory Committee: The activities of the Library Network Advisory Committee as they advise and inform the Iowa Telecommunications and Technology Commission on behalf of the library community will include but not be limited to the following:

- Recommend rates as they affect library users of the ICN
- Focus on library applications and technical issues (as opposed to more general education issues)
- Develop administrative rules and regulations for library users of the ICN
- Monitor developments affecting electronic library services at the state level
- Advocate for library use of the ICN for data and video services
- Influence planning for local ICN facilities appropriate to library settings

Representation: The committee should be composed of five members; members should be chosen to represent broad library interests such as higher education, K-12 education, public libraries, and special libraries plus one member from the SILO Advisory Board.



Continuing Education and Training

Education will focus on three audiences: the public, library staff, and decision makers. The public needs to be skilled in using the new information technologies, in understanding their limitations, and in the integrated use of electronic information with the more traditional formats. Library staffs will require continuing education in order to implement these new capabilities and to provide educational materials and approaches for the public. Decision makers require succinct information about the policy and funding issues that must be addressed within national, state, and local government, as well as within institutional planning and funding processes.

Assisting and Educating the Public

Broad-based education, including a public relations program to inform its constituencies, must be on-going in order to keep the end user informed. Iowans must be aware of what is possible so that they can make use of the technology or, if it is not available in their community, to work toward making it available. If Iowa libraries are to be the agents for equality of access to information, then access must be available to everyone, and everyone must know it is available.

The public will need assistance using the available technology and in gathering, organizing and evaluating the information. Library staff with experience in finding and organizing information will remain an essential link in this process.

Continuing Education for Library Staffs

Library staff will need continuing education about available technologies, application and use of those technologies, and current status of applications. They will also need ongoing technical staff support for hardware and software.

Skills will be developed and supported through a variety of mechanisms for continuing education: workshops sponsored by Regional Libraries, the State Library, AEAs and other agencies; conference sessions sponsored by associations and organizations such as the Iowa Educational Media Association, Iowa Library Association, Association of College and Research Libraries; regular features and columns in newsletters published by various library agencies and organizations; and users' groups.

Library staff will require individual, one-on-one assistance from technical support consultants when problems arise with hardware or software.

Educating Decision-Makers

Those boards and individuals who will be making decisions about technology in libraries (including decision makers in foundations and government agencies that fund such innovation) need to become informed about available technologies, benefits, costs, and ongoing commitment. Presentations, including videos and information packets, should be developed to target each of the several groups of decision-makers: local governments, library boards and staff, school and academic boards/administrators, other administrative authorities, and state-level decision-makers (to ensure that libraries are a part of the ICN and other information technologies).

Resources Required

Funding must be found to ensure both human and technological resources for the new environment. Human resources include:

- **Technical Consultants**--full-time, ongoing; to help libraries with start-up, as well as assist with ongoing use/upgrades;
- **Trainers**--to "train the trainers" who will be working with library staff on developing their skills;
- **Public Information Specialists**--to prepare and make presentations to decision-makers and other groups; develop videos and information packets; direct state-wide campaign to make Iowans aware of information and technologies available at libraries.

Technical resources needed include but are not limited to:

- User-friendly interfaces to technology/systems
- Instructional software

Software specifically designed for instructing the public in using technologies will be an important component in assisting the public in effectively using technology.

Funding Strategies

Guiding principles

Funding for an electronic library and information services program in Iowa will require a complex mix of funding sources, incentive programs, subsidies, and fee for services. In order that funding strategies have some logic, a set of principles for local, state, and federal responsibilities for the different components of an electronic library and information program are suggested:

- **Level playing field:** meaning that all libraries should have the ability to offer at least basic core services so that all communities are provided a base level of electronic library service.
- **Core information services:** that continue to be provided to citizens without charge, though libraries may provide additional "value-added" services that would be self-supporting for a fee.
- **Rate structures:** should recognize libraries under educational rates rather than administrative rates, since libraries are part of the educational support systems. This should include **voice, video, and data**. Special education rates on lease lines from other providers should recognize the special needs of education and should be equivalent to ICN rates.
- **Flexible access:** free of geographic constraints and with multiple technical entry points,
- **Capacity:** Libraries should continue to be **part of the expansion of the ICN**, providing them with **adequate bandwidth** for future multi-media information delivery over the ICN and providing coverage to all points within the state.

Costs for an electronic information network in Iowa must be broken down into one-time and continuing costs and into types of costs. Sources of funding are varied and are only categorized here, for brevity.

One-time costs

- Start-up costs at local sites (space renovation, electrical requirements, etc.)
- Meeting room equipment in libraries
- Telecommunications equipment (local area networks [LANs], phone lines, etc.)
- Local library automation system upgrades (hardware and software)
- Laying of ICN fiber-optic cable
- Workstations
- Education and training

Continuing costs

- Monthly network costs (ICN, Internet, OCLC, RLIN, and private network costs)
- Staffing (continuing education units [CEUs], staff time and salaries)
- Data conversion
- Licensing of databases and full text from publishers
- Software and hardware maintenance
- Education and training

Sources of funds

- Federal (grants, LSCA, digital library grants, block grants, etc,)
- Foundations and private giving
- State legislative appropriations
- Local library budgets
- ICN subsidy rates
- Reallocated funds
- Partnerships with other agencies/organizations
- Services for a fee
- Cost sharing

Responsibilities of the key players

- **Federal government:** Various federal grant programs provide seed funds for start-up or prototype systems; typically these are one-time funds, often requiring matching funds from the applicant and a plan for continuation of the project goals after the federal funding runs out.

- **State government:** With the increase in access models for information and resource sharing, interlibrary loan and document delivery are increasing in volume at a steady rate and are expected to continue to increase as libraries purchase less and less of the world's publishing output. In order to provide cost-sharing incentives for libraries to make their local materials available statewide, cost-sharing between the local library and the state are necessary to reimburse the local library for services rendered to users in other political or funding jurisdictions. The state of Iowa should cost-share through funding of Open Access and Access Plus. The state should also fund the state library and regional libraries sufficiently for them to take on new planning and coordination responsibilities for all types of libraries. (see below)

- **State Library of Iowa:** This is the only entity in the state with a legislative mandate for statewide coordination of library strategic planning across types of libraries. While it does not have legal or fiscal responsibility for local libraries, it can influence their actions through statewide planning, seed projects, and incentive programs.

- **Regional libraries** (education & consulting): The seven state-funded regional libraries provide education, training, consulting, and interlibrary loan support to small public libraries in the state. They will have a key role in supporting regional participation in the evolving electronic library environment.

- **Regents' universities:** The research libraries at the three Regents' universities play a formal role as "libraries of last resort" in the state interlibrary loan network, supplying a high percentage of research materials needed by citizens of Iowa.

- **Community colleges:** The community colleges and their libraries have a particular role in distance

education, housing many of the ICN classrooms around the state.

- **Area education agencies:** AEA libraries and media centers will be information centers for K-12 teachers and students.

- **ICN:** The ICN cost subsidies are an important component of fiscal planning for telecommunications and delivery of distance education, teleconferencing and information access. Without educational subsidies, many libraries will not be able to participate in the networks, as commercial rates are beyond their means.

- **Local funding agency/parent agency:** The parent institution has the major responsibility for funding the needs of its particular clientele. All of the other programs above are supplemental, providing start-up costs, funding prototypes, providing incentive funding and training to encourage change, or to cost-share with the State Library to provide services to users outside their local responsibility.

Funding a statewide electronic library information network

Given the ubiquitous nature of information technology and the fact that it pervades every aspect of library operations and service delivery, there must be a partnership approach to funding. The state responsibility should focus on the following components to develop and maintain the electronic statewide library and information services network:

- State Library leadership: increase in annual budget
- ICN fiber-optic cable: costs of last mile and continued expansion of cable
- Subsidized rates to the education community for voice, video, and data
- Regional Library budgets

New models for sharing of resources across government boundaries must be found, based upon concepts of cost-sharing. At present the burden is on local libraries to subsidize use by patrons outside their jurisdiction. With growing demand, this is no longer an adequate funding strategy. The state has a responsibility to equalize these costs by shouldering its fair share through adequate funding of such programs as Open Access and Access Plus.

Specific dollars which will be necessary to fund the further development of electronic library services must be based upon local and regional strategic planning efforts, annual recommendations of the SILO Advisory Board to the State Library of Iowa, and annual requests for legislative appropriations. The following funding matrix makes clear that the state portion of this effort is actually a very small portion of the total cost to libraries within the state.

Information technology and computing are changing so rapidly that the ground is constantly shifting, with key elements developing in a political arena. Consequently, it is difficult to draft a statewide plan composed of specific steps. Therefore, this plan is based upon the assumption of strategic planning and annual funding plans.

Matrix Funding Model

Cost Categories	Sources of Funds								
	Federal Funds	Grants & Gifts	State Library	Regional Libraries	Local Libraries	ICN Subsidies	Reallocated Funds	Partnerships	Cost Sharing
One-Time Costs									
Local start-up costs									
Meeting room equip.									
Telecomm. equipment									
Local system upgrades									
ICN cable laying									
Workstations									
Education & training									
Continuing Costs									
Monthly network costs									
Staffing									
Data conversion									
Licensing costs									
Software/hardware maintenance									
Education & training									

Recommendations

1. Recognize the role of libraries and their provision of access to information as a cornerstone to economic development and the economic health and well being of Iowa.

2. Recognize the State Library of Iowa as key to the planning, development, and coordination of library services statewide (*Code of Iowa*, Subchapter IV, section 256.51). No other organization within the state has such a mandate.

3. Recognize libraries as a fundamental component in the educational process, both formal and informal, with a vision of providing all Iowans access to information and ideas that enhance their lives and allow them to be productive citizens in a democratic society.

4. The state must fund the last mile of fiber-optic cable to libraries.

5. The State Library of Iowa should create a State of Iowa Libraries Online (SILO) Advisory Board which is representative of the library community to plan, educate, and advocate for the interests of Iowa library users in the new information environment.

6. The Iowa Telecommunications and Technology Commission (ITTC) should create a Library Network Advisory Committee; this committee should advise and inform the ITTC (the governing body for the ICN) regarding library applications on the ICN. It should be a five member committee (one member being drawn from the SILO Advisory Board) with representation from the various types of libraries.

7. A continuing education program should be designed that is aimed at three audiences: the public, library staffs, and decision makers.

8. Funding strategies will be a complex matrix made up of multiple funding sources with local, state, federal, and private sector responsibilities. Areas of state responsibility have been defined; any state funding strategy should be guided by principles that protect the public interests of the citizens of Iowa as information is treated increasingly as a commodity.

9. Increase the State Library and regional library budgets sufficiently to carry out new mandates for planning and coordination of statewide information networks and access programs such as Open Access and Access Plus which require a local and state match to succeed.

10. Technical standards are critical to transferability of data between different equipment platforms and should be supported by libraries and information providers.

11. The Council calls for wide distribution of this report to key players in the state; it also suggests holding a special conference for legislators, librarians, and library friends to discuss the conclusions of the report and possible legislative actions.